REMARKS/ARGUMENTS

The present Amendment is responsive to the final Office Action mailed October 2, 2007 in the above-identified application.

Claims 5 and 23 are canceled without prejudice or disclaimer. Therefore, claims 1-4, 6-22 and 24-27 are the claims currently pending in the present application.

Claims 1, 13, 17 and 22 are amended to clarify features recited thereby. Further, claims 2, 8, 15 and 18 are amended to conform them more closely to U.S. patent practice style.

Rejection of Claims 1-21 under 35 U.S.C. § 112, Second Paragraph

Claims 1-21 are rejected under 35 U.S.C. § 112, second paragraph, on the ground that they are indefinite because claim 1 recites the limitation "the outer holding pipes", which lacks sufficient antecedent basis. Claim 1 is amended.

Rejection of Claims 1, 5, 20-23, 25 and 27 under 35 U.S.C. § 102

Claims 1, 5, 20-23, 25 and 27 are rejected under 35 U.S.C. § 102(e) as being anticipated by Korbik et al., U.S. Patent No. 6,843,958. Reconsideration of this rejection is respectfully requested.

Claims 1 and 22 require that each coolant pipe section of the coolant pipe sections is led to the outside of the outer casing plate inside a holding pipe. Further, claims 1 and 22 require a fixed point securing element and second securing elements for securing the holding pipes.

Without intending to limit the scope of the claims, an advantage or effect according to an aspect of Applicant's invention as claimed in claims 1 and 22 is that bulging or dishing of the cooling plate into or toward the interior of the furnace may be prevented and, at the same time, since the cooling pipes are led to the outside inside of the holding pipes no additional holes in the furnace may be necessary. Accordingly, when only one fixed point securing element is provided, it may bear the entire weight of the cooling plate, and thus may be positioned at a central region of the cooling plate. By contrast, peripheral regions of the cooling plate where the cooling pipes are led through the furnace casing need not be fixedly connected to the casing plate, and no fixed point securing elements are necessary. Thus, the holding pipes disclosed in Applicant's invention confine movement to the x- and y- directions (shown in Figure 3 of Applicant's disclosure) and prevent plastic deformation (bulging or dishing) in the third direction, namely in

the direction of the interior of the furnace (along the z axis). Note that the securing elements for these holding pipes are different from the "fixed point securing elements" and may also be different from the "movable point securing elements" recited in claims 2 and 3.

Thus as discussed, for example, in Paragraph 8 of Applicant's disclosure, the holding pipes are attached at the cooling plate and are led to the outside through the furnace casing, with a securing element positioned on the part of the holding pipes located outside of the furnace casing ("... after they [the holding pipes] have been passed through the furnace casing plate ..."). As shown in Figures 1 and 2, the securing element with which the holding pipes are provided may be welded to the holding pipes but not fixedly connected to the furnace casing. Thus, when the cooling plate moves or bulges due to plastic deformation, the holding pipes, and consequently the securing elements with which they are provided, may also move since they are attached to the cooling plate. However, since the securing elements are not fixedly connected to the furnace casing, they can allow movement of the holding pipes, and consequently, movement of the cooling plate in the plane of the furnace casing (i.e., along the x- and y- axis shown in Figure 3). It will be appreciated, however, that since they are supported against the furnace casing (as discussed in Paragraph 9 of Applicant's disclosure), any movement in the inward direction with respect to the furnace (along the z- axis shown in Figure 3) can thus be prevented.

Korbik discloses a cooling plate for metallurgical furnaces in which several movable point fastening elements 12, in the form of fastening screws, are arranged on the surface of the cooling plates 10 to attached them to the furnace steel jacket 15 (Korbik, column 3, lines 57-62; Figures 2 and 4). Korbik discloses a copper cooling plate fixedly connected to the furnace casing in its upper region by a "fastening element which acts as a fixed point in all spatial directions." (Korbik, column 2, line 42; Figures 1 and 2). Further, Korbik discloses that the cooling pipes of the upper region are also fixed points since they are welded to the furnace casing. The cooling pipes in the lower region of the cooling plate are not fixedly connected to the furnace casing but "provide thus movable points in all spatial directions" (Korbik, column 2, lines 55-56). For this reason, these are provided with compensators 16 for sealing. Korbik also discloses a centrally located fixed point fastening element (Korbik, column 2, lines 64-65; Figures 3 and 4), and that all cooling pipes are welded without compensators to the furnace casing and provide additional fixed points.

Accordingly, wherever Korbik discloses that the cooling pipes act as fixed points, any movement of the cooling plate in the region where the cooling pipes are led through the furnace casing cannot at all be followed by the cooling pipes since they are fixed in all spatial directions (x-, y- and z- axis). In effect, the cooling pipes themselves impede the movement of the cooling plate, therefore inevitably stresses will arise and will have to be borne by the cooling pipes. Hence, the cooling pipes eventually will crack and leak coolant.

In addition, whenever the cooling pipes of Korbik act as "movable points in all spatial directions" (e.g., as shown in Figures 1 and 2 of Korbik) movement inward (in the z- direction toward the interior of the furnace, also known as bulging or dishing) is not prevented in the regions where the cooling pipes are led through the furnace casing. Thus, the movable point cooling pipes may follow the bulging of the cooling plate to various extents, but at some point the unrestrictive movement may become too great to be followed by the cooling pipes, and thus will crack.

Korbik does not disclose or suggest "a cooling plate comprising holding pipes thereon," such that the holding pipes:

1. are leading through the outer casing plate,
2. are provided with securing elements after they have passed through the furnace casing plate, and
3. inside which the coolant pipes are led through the furnace casing plate.

The Office Action alleges that Korbik's element 16 (Korbik, column 4, line 1, described as a compensator) is a "holding pipe" (Office Action, page 3, line 2), and that this element 16 is a holding pipe that surrounds a cooling pipe section 14 (Office Action, page 3, line 4). Further, the Office Action alleges that element 16 "indeed acts as a 'holding pipe' and at least partially has a 'securing' function" (Office Action, page 6).

As discussed, according to an aspect of Applicant's invention as claimed in claims 1 and 22, bulging of the cooling plate in regions where the cooling pipes are led through the furnace casing may be restricted by holding pipes provided with securing elements and not by the cooling pipes themselves. Accordingly, any stresses that occur in the z- direction due to this impediment of cooling plate movement in the z- direction are borne by the high strength material of the holding pipes and the securing elements, while movement in other spatial directions x-, y- direction, in the plate of the outer casing is allowed by the holding pipes and the securing elements. At the same time, no additional holes in the furnace casing is necessary since the

cooling pipes are led to the outside inside the holding pipes, therefore no stability-decreasing additional holes are required.

Korbik's element 16 is not attached to the cooling plate but only to the furnace casing. This is made quite explicit by Korbik: " ... fastened to the furnace steel jacket by means of compensators ...." (Korbik, column 2, lines 54-55). This is also seen in Korbik's Figure 2, which clearly shows that the compensator 16 is not attached to the cooling plate. Accordingly, compensator 16 is not a holding pipe at all as that term is used in claims 1 and 22 of the present application.

Further, compensator 16 does not pass through the outer casing plate to the outside. Thus, the coolant pipes cannot be led through the furnace casing inside the compensator. It therefore necessarily follows that Korbik also does not disclose or suggest the coolant pipe section as being led to the outside of the outer casing plate inside the holding pipe, as further required by claims 1 and 22. Accordingly, Korbik does not disclose or suggest the recitations of claims 1 and 22.

Claims 20 and 21 depend from claim 1, and claims 23, 25 and 27 depend from claim 22 . Accordingly, claims 20, 21, 25 and 27 are patentably distinguishable over the cited art for at least the same reasons. Claims 5 and 23 are canceled without prejudice or disclaimer and thus the rejection is moot as to these claims.

Rejections of Claims 2, 3, 6-19, 24 and 26 under 35 U.S.C. § 103

Claims 2, 3, 6-19, 24 and 26 are rejected under 35 U.S.C. § 103 as being obvious from Korbik.

Claims 2, 3 and 6-19 depend from claim 1, and claims 24 and 26 depend from claim 22. As discussed, Korbik does not disclose or suggest the recitations of claims 1 and 22. Accordingly, claims 2, 3, 6-19, 24 and 26 are patentably distinguishable over the cited art for at least the same reasons.

Rejections of Claim 4 under 35 U.S.C. § 103

Claim 4 is rejected under 35 U.S.C. § 103 as being obvious from Korbik in view of Stein (U.S. Patent No. 5,904,893). Reconsideration of this rejection is respectfully requested.

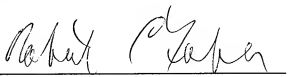
Stein does not cure the above-discussed deficiencies of Korbik as they relate to the above-noted recitations of claim 1. Accordingly, since claim 4 depends from claim 1, it is patentably distinguishable over the cited art for at least the same reasons.

In view of the foregoing discussion, withdrawal of the rejections and allowance of the application are respectfully requested.

THIS CORRESPONDENCE IS BEING SUBMITTED ELECTRONICALLY THROUGH THE UNITED STATES PATENT AND TRADEMARK OFFICE EFS FILING SYSTEM ON **JANUARY 2, 2008**

RCF:GB:sr

Respectfully submitted,



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